

REMARKS

In the present Amendment, the preamble of Claim 20 has been amended for clarity to recite “A computer readable medium having stored thereon instructions for enabling a computer to execute a process for determining production parameters.”

No new matter was added, and entry of the Amendment is respectfully requested. After entry of the Amendment, Claims 1-20 are pending.

In Paragraph No. 2 of the Office Action, Claims 1-20 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over Claims 1-14 of copending Application No. 10/812,064.

Applicants have submitted herewith a Terminal Disclaimer to obviate the rejection.

In Paragraph No. 3 of the Office Action, Claims 1-14 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over Claims 1-14 of copending Application No. 10/812,052.

Applicants have submitted herewith a Terminal Disclaimer to obviate the rejection.

In Paragraph No. 4 of the Office Action, Claims 1-17 and 20 were rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter.

Applicants respectfully traverse the rejection.

Applicants submit that the production parameter recited by the present claims (such as gate opening/closing timing) is a useful, tangible and concrete result that can be determined by the recited steps, in order to reduce mold clamping force and suppress weld line occurrence without repeated trial and error.

With respect to Claim 20, the Examiner asserts that Claim 20 is directed to a “program,” and thus recites no tangible result. In order to advance prosecution, Claim 1 has been amended for clarity to recite “A computer readable medium having stored thereon instructions for enabling a computer to execute a process for determining production parameters”

In view of the above, Applicants respectfully request reconsideration and withdrawal of the §101 rejection of Claims 1-17 and 20.

In Paragraph No. 6 of the Office Action, Claims 1 and 3-20 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,558,605 (“Wilson”) taken together with either U.S. Patent No. 6,096,088 (“Yu”) or U.S. Patent No. 6,816,820 (“Friedl”).

Applicants respectfully traverse the rejection.

Wilson, Yu and Friedl, alone or in combination, do not disclose or render obvious the method for determining a production parameter according to the present claims.

Applicants’ invention is directed to a method for determining a production parameter by combination of a numerical analysis method for calculating injection molding process and a computer-aided optimization method.

In contrast, Wilson, Yu and Friedl do not disclose or fairly suggest “determining a production parameter by combination of a numerical analysis method for calculating injection molding process and a computer-aided optimization method.”

Therefore, by the technologies of the cited references (Wilson, Yu and Friedl), (1) experience about an injection molding and (2) trial and error are needed to obtain optimized parameters. Further, when the number of gates greatly increases, it becomes difficult to obtain optimized parameters.

On the other hand, the present invention is a method for determining a production parameter by combination of a numerical analysis method for calculating injection molding process and a computer-aided optimization method. Therefore, by this invention, neither (1) experience about an injection molding nor (2) trial and error are needed to obtain optimized parameters. Moreover, even if the number of gates becomes very large, it is not difficult to obtain optimized parameters.

Turning to the specific teachings of the cited references, Applicants also submit that Wilson is not directed to controlling or optimizing gate sequence timing. Instead, Wilson relates to adding reinforced plastic pellets to a thermoplastic mold material, in order to reinforce various thin plastic parts. See Wilson at col. 2, lines 22-25. Thus, Wilson is unrelated to determining time-sequentially an inflow of resin material from resin inflow conduits, as is recited by Claim 1.

With respect to Yu, the Examiner asserts that Yu discloses determining optimum gate locations and processing conditions by simulating proposed shapes and injection points. Further, the Examiner asserts that Yu discloses that this simulation can predict the location of weld lines and air traps. See Yu at col. 1, lines 11-25 and col. 13, lines 28-44. Yu also discloses that “[a] requirement of any injection mold is that it can be filled with molten polymer given the pressure limits of a real injection molding machine.” See Yu at col. 1, lines 18-25. Thus, Yu is unrelated to determining time-sequentially an inflow of resin material from resin inflow conduits, as is recited by Claim 1.

The Examiner also cites Friedl as disclosing a method of determining the number and location of gates. However, similar to Yu and Wilson, Friedl is unrelated to determining time-sequentially an inflow of resin material from resin inflow conduits.

Despite the fact that all three references are unrelated to optimizing time-sequentially the inflow of resin into a cavity, the Examiner takes the position that it would have been obvious to use "the well known and conventional numerical flow analysis and optimization of Yu or Friedl to determine the time sequence of the gates, since these produce the desired flow within the mold cavity."

However, the cited references do not suggest optimizing time-sequentially the inflow of resin into a cavity. Accordingly, the inventive combination according to the present claims is more than a predictable use of prior-art elements.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the §103 rejection of Claims 1 and 3-20 based on Wilson, Yu and Friedl.

In Paragraph No. 9 of the Office Action, Claim 2 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Wilson taken together with either Yu or Friedl and further in view of U.S. Patent No. 6,454,973 ("Norton").

Applicants respectfully traverse the rejection.

Wilson, Yu, Friedl and Norton, alone or in combination, do not disclose or render obvious the method for determining a production parameter according to Claim 2.

The Examiner cites Norton as disclosing the importance of time-sequence valve gates in injection molding. See Norton at col. 1, lines 47-52. Further, Norton discloses at col. 1, line 65, to col. 2, line 8 that:

Clamp tonnage is best minimized when the flow of the plastic material through the channels or runners corresponding to portions of the cavity are evenly balanced. Thus, optimum flow of material through the proper channels or runners for the proper

period of time may minimize the amount of injection pressure or force required to fill the mold cavity with liquid plastic, and thus reduce clamp tonnage requirements.

Furthermore, Norton discloses that the liquid plastic entering the mold cavity from different channels or runners meets at transition zones within the cavity, which may cause inferior integrity and appearance at the transition zone. See Norton at col. 2, lines 9-11.

However, Norton is directed to opening and closing a single gate. See, e.g., Norton's Abstract. Norton does not teach or suggest the present claimed invention.


In view of the above, Applicants respectfully request reconsideration and withdrawal of the §103 rejection of Claim 2 based on Wilson, Yu, Friedl and Norton.

Allowance of Claims 1-20 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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